Town of Buckeye
Water Resources Department
423 Arizona Eastern Avenue, Buckeye, Arizona 85326, Phone (623) 349-6822, Fax (623) 349-6850

1.0 TOWN OF BUCKEYE WATER CONSERVATION PLAN

The Town of Buckeye is dedicated to supplying its citizens with safe, reliable, high-quality water. Water conservation is one of the most powerful and least expensive tools available to ensure that the Town has adequate water resources to meet the needs of a growing population. The Town has developed the following water conservation (water efficiency) plan to:

(1) Increase water system efficiency;
(2) Reduce waste; and,
(3) Encourage consumer water conservation.

This water conservation plan applies only to the Town of Buckeye water service area, water customers of the Town of Buckeye, and Town of Buckeye employees, officials and facilities.

The Town of Buckeye is a large municipal water provider located within the Phoenix Active Management Area (AMA). Such providers located within AMAs are required by the Arizona Department of Water Resources (ADWR) Non-Per Capita Conservation Program to develop and implement water conservation programs including:

(1) A water conservation public education program; and,
(2) At least five additional water conservation measures.

Please refer to Section 4.0 for further details of the water conservation public education program. Please refer to Sections 7.0 and 8.0 for descriptions of additional water conservation measures.

This water conservation plan will be reviewed annually by the Town and revised as necessary. A revised version of this water conservation plan will be submitted to ADWR at least once every five years.

This water conservation plan includes both demand and supply management measures including the following:

A. Steps to detect and control lost and unaccounted for water;
B. A tiered water rate structure to encourage efficient use of water; and,
C. A continuing water conservation education program that stresses the importance of water conservation, provides information regarding current and potential future drought

conditions and informs the public of water conservation measures to reduce vulnerability to drought conditions. The water conservation measures include:

- Curtailment of nonessential water uses;
- Affordable water reduction technologies for indoor and outdoor uses;
- Credit or rebate and retrofit programs for indoor and outdoor uses; and,
- Reuse and recycling programs.

Definitions

Artificial turf – An artificial surface made of synthetic material which resembles grass.

Drip irrigation system – A method of providing water to plants through small-diameter tubes and emitters to minimize evaporation losses and runoff. The tubing is installed underground.

Dual flush toilet – Dual-flush toilets have two buttons for flushing, a half flush and full flush. The half flush, for liquid, uses 0.8 gallons per flush. The full flush, for solids, uses 1.28-1.6 gallons per flush depending on the model.

Effluent – Sewage or wastewater after it has been treated at a sewage treatment plant.

Gray water – Wastewater in the home from bathroom sinks, bathtubs, showers, and washing machines. Does not include wastewater from toilets, dishwashers, and kitchen sinks.

Over-seeding – Spreading seeds of winter grass (such as rye grass) over a warm weather grass lawn (such as bermuda grass) to maintain green grass throughout late fall and winter months. Over-seeding is discouraged because water can be conserved (and mowing reduced) by allowing warm weather grass to go dormant and turn brown during winter months. Bermuda grass is dormant in winter and only requires water once every three to four weeks (less if it rains).

Runoff – Water which does not soak into the soil or landscape but flows off of it. Runoff occurs if the water is applied too quickly, for too long a duration, or on too steep a slope. In this document the word runoff does not refer to natural stormwater runoff.

Smart irrigation controller - Smart irrigation controllers use daily local weather data along with historical evapotranspiration data to adjust irrigation system runtimes to meet the water requirements of the landscape. In addition, smart irrigation controller may be supplied with a combination rain shut-off/temperature sensor which allows the controller to adjust the landscape irrigation based on the local temperature and also to disable irrigation when it rains.

Turf – Grass, its roots, and the upper soil bound by grass roots. A lawn composed of grass.

Xeriscape – Landscaping using drought-resistant plants in an effort to conserve water. Water-conserving landscaping that emphasizes plants whose natural requirements are appropriate for the local climate. The word xeriscape was formed by combining *xeros* (Greek for "dry") with *landscape*.

2.0 REDUCING LOST AND UNACCOUNTED FOR WATER

Utility workers with the Town's Water Resources Department are on call 24 hours per day, 7 days per week and are trained to find and repair obvious and hard-to-detect water leaks. Currently, the public can report water leaks at the following 24-hour leak reporting hot-line: (623) 764-4848. During the hours of 8 AM to 5 PM Monday through Friday water leaks may also be reported at (623) 349-6800.

The Town is considering instituting a reward system to encourage the public to report water leaks and irrigation systems that fail to shut off or continue watering during rainfall or high soil moisture conditions. The reward system could offer water bill credits. As another option, the Town could solicit local restaurants and commercial businesses to voluntarily offer vouchers or coupons that provide discounts for services or merchandise as a reward. In return, the local restaurants and commercial businesses would receive recognition for partnering with the Town to reduce water leaks and water waste.

The Water Resources Department water meter service technicians are alert to test and replace faulty water meters which fail to properly record water use. In addition, the water meter service technicians respond within 48 hours to user complaints about higher than anticipated water bills in order to help users detect and correct leaks and excessive water use. The technicians employ flow meters and dataloggers upon request to assist users in determining whether or not they have a leak. The technicians also employ flow meters and dataloggers upon request to assist users in making adjustments and repairs to their irrigation systems to reduce excessive watering.

Utility billing personnel will review water billing accounts and use software to alert them to unusually large or small water uses. Water meter service technicians will then be notified to re-read the meter. If they verify the large water use and notice evidence of a leak the customer will be notified. Water meter service technicians and utility workers are available to help customers check for obvious leaks and will offer advice to help customers check for leaks upon request.

The Town requires the installation of hydrant water meters on construction sites where hydrant water is used, on dust control water fill-up sites, and at street sweeper fill-up sites.

In the future, the Town plans to obtain reuse permits and install reclaimed water fill stations at each water reclamation facility to allow reclaimed water, instead of potable water, to be used for dust control, street sweeping, and construction water.

3.0 WATER RATE STRUCTURE ENCOURAGES CONSERVATION

The Town has implemented a tiered water rate structure to encourage water user conservation. The residential rate structure includes a base rate, a relatively low rate per thousand gallons for the first 6,000 gallons, and three progressively increasing water rate steps which increase the rate per 1,000 gallons for higher water use. The rate structure is designed to encourage conservation by charging residential water customers who use more water a higher rate than those who use less water. The rate structure is also intended to inform higher volume residential water users that their water usage is higher than the typical residential water customer. Typical residential water customers in the Sundance Development and old town Buckeye use approximately 6,000 gallons of water or less per month.

The commercial water rate structure includes progressively increasing base rates for larger, higher volume water meter sizes.

BUCKEYE 2008 WATER RATES

RESIDENTIAL WATER RATES	Residential All Areas Except Sunora	Base	$ 12.70	Sunora Incorporated and Sunora Unincorporated		Base	$ 6.35
		Charge for each 1,000 Gals: 1,000-6,000	$ 2.20		Charge for each 1,000 Gals: 1,000-4,000		$ 1.33
		7,000-10,000	$ 3.10			5,000-8,000	$ 1.77
		11,000-15,000	$ 5.30			9,000-12,000	$ 2.65
		16,000+	$ 7.95			13,000+	$ 3.98

COMMERCIAL WATER RATES	Meter Size 3/4"	Base	$ 12.70	Charge for each 1,000 Gallons	$3.53
	1"	Base	$ 38.10		
	1.5"	Base	$ 38.10		
	2"	Base	$ 101.61		
	4"	Base	$ 190.51		
	6"	Base	$ 317.52		
	8"	Base	$ 635.04		

4.0 WATER CONSERVATION EDUCATION AND OUTREACH

Water conservation is a shared responsibility between the Town government, citizens and other water users. Citizen water conservation education and citizen participation are essential to a successful water conservation program. Education of water users in workplaces and hospitality establishments is also vital to foster their participation.

One of the first goals of our water conservation education program will be to change the perception that water conservation requires deprivation. Instead of giving up comfort and convenience, water conservation requires making minor habit changes to reduce water waste, incorporate improved efficiency devices and appliances into the home or business, and select colorful and diverse water-efficient plants. This water conservation plan promotes a lifestyle well-suited to our climate, and reduces water bills.

The Town has acquired the Arizona Conserve Water Educator's Guide (Project WET [Water Education for Teachers], 2007). This guide contains K-12 activities designed to assist teachers in bringing water conservation education into the classroom. The activities and instructional materials in the guide may also be appropriate for Town-sponsored water conservation education events in the library and during summer recreation programs.

The Town will work to educate residents and businesses about the importance and advantages of practicing water conservation. Education programs will be instituted through methods including:

- Presenting school programs;
- Acquiring materials to be used and distributed in schools;
- Writing messages on water bills;
- Including water bill inserts;
- Publishing articles or messages in local newspapers;
- Distributing newsletters;
- Educating through the Town website;
- Developing partnerships with other local city governments in order to disseminate information;
- Creating rewards and incentives for residential and business conservation;
- Providing gardening workshops encouraging xeriscape techniques; and,
- Providing water conservation public outreach events and workshops.

The Town has developed a water conservation web page which can be accessed at the following web address: http://www.buckeyeaz.gov/index.asp?nid=703. The web page lists water conservation measures from Water Use It Wisely's website for water saving tips, and adapts them to Buckeye's arid climate. The web page also lists water saving devices from the U.S. Environmental Protection Agency's (EPA's) WaterSense website. In addition, the web page directs readers to H_2Ouse's website which points out opportunities to save water in and around the home, and SAHRA's (Sustainability of Semi-Arid Hydrology and Riparian Areas) website which provides water resource management information and advice. The Town's web page provides links to the websites mentioned above: watersense@epa.gov, wateruseitwisely.com, h2ouse.org, and sahr.arizona.edu.

Over the next year the Town will develop partnerships and work with local school districts, community centers, local developers, and businesses to distribute water conservation educational information and expand public outreach. The Town may also begin to hold local water conservation and xeriscape gardening workshops. In addition, the Town will also request recommendations from the public for improved water conservations measures.

The Town became a WaterSense promotional partner in July 2008. WaterSense is an EPA program that promotes water-efficient products, services, and practices. WaterSense labels products that are at least 20 percent more water efficient than similar products in the marketplace. The WaterSense label will help customers easily identify water-efficient products and services. WaterSense will provide the following water conservation materials for the Town to distribute:

- Utility bill stuffers;
- Artwork for promotional items (e.g., stickers, magnets);
- Public service announcement templates;
- WaterSense partner logo artwork;
- Press release templates;
- Fact sheets; and,
- Brochures.

At least twice a year the Town will communicate to customers the importance of water conservation and inform customers how to obtain water conservation information available to them from the Town. Communication channels will include the following: messages on water bills, water bill inserts, messages on the Town's web page, newsletters, and articles or messages in local newspapers. The Town will also set up a booth to display and distribute water conservation information during two or more annual public events held in the Town.

The Town will provide customers with free pamphlets and brochures on water conservation. The information will be available at the Water Resources Department, other Town offices, the library, other public offices, and will be sent to customers upon request.

The Town has posted the "Do it Yourself" Landscape Guide (ADWR, 2006) on the Town's water conservation web page and will distribute copies to developers and homeowners upon request. Copies are available at the Water Resources Department. The guide provides color photographs, landscape and irrigation design plans, and a recommended plant list for 18 different landscape plans for single-family homes. The landscape plans provide a variety of options, ranging from xeriscape to turf areas, to meet individual needs and preferences.

5.0 WATER SAVING HABIT CHANGES

The Town will continually expand wise and practical conservation measures. Students, residents, business owners, and tourists will be educated and encouraged to practice water-saving measures and establish more conservation-minded habits with emphasis on the following areas:

- Bathroom, kitchen, laundry room water use;
- Household water-system maintenance;
- Landscaping;
- Pool maintenance; and,
- Car washing and cleaning of driveways, patios or sidewalks.

Some of the basic water conservation habit changes recommended by ADWR include:

- Reducing discretionary outdoor water uses such as car, patio, sidewalk or driveway washing;
- Reducing evaporation losses by avoiding landscape watering during the heat of the day;
- Using smart irrigation controllers;
- Limiting showers to 5 minutes or less;
- Selectively replacing turf with xeriscape or lower water-use landscaping;
- Discouraging winter over-seeding;
- Washing only full loads of laundry or dishes;
- Using pool covers to reduce evaporation; and,
- Adjusting sprinklers to reduce overspray and run-off into streets.

The Town's water conservation program will allow the flexibility for local developments, residents and businesses to implement their own water conservation measures.

6.0 VOLUNTARY WATER SAVING MEASURES

The following voluntary water saving devices and practices are encouraged because they are effective, affordable, and relatively easy to implement.

6.1 Bathroom, Kitchen, and Laundry Room Water Efficiency

6.1.1 High efficiency or dual-flush toilets

Toilets are by far the main source of water use in the home, accounting for nearly 30% of residential indoor water consumption. Over the course of a lifetime an individual will likely flush the toilet nearly 140,000 times (WaterSense, 2008). Recent advancements have resulted in toilets using 20% less water than the federal standard of 1.6 gallons per flush (gpf), while providing equal or improved performance. The improved low water use toilets include high efficiency toilets and dual-flush toilets. High efficiency toilets use less than 1.3 gallons (typically 1.28 gallons) per flush. Dual-flush toilets have two buttons for flushing, a half flush and full flush. The half flush, for liquid, uses 0.8 gallons per flush. The full flush, for solids, uses 1.28-1.6 gallons per flush depending on the model.

A voluntary replacement of a standard 1.6 gallon per flush toilet with a high efficiency or dual-flush toilet can save 584 gallons of water per person per year or 1,752 gallons per year for a family of three. Many traditional toilets use 2.9 gallons of water in a single flush. Older, pre-1994 toilets use 3.5 gallons of water or more in a single flush. If older pre-1994 toilets are replaced with high efficiency or dual-flush toilets, 4,000 gallons per person per year or 12,000 gallons per year for a family of three can be saved. Please refer to Section 7.1 for a potential water bill credit for the replacement of pre-1994 toilets. Please refer to Section 7.2 for a potential water bill credit for the replacement of post-1994 toilets which use between 1.6 and 3.4 gallons of water per flush, with high efficiency or dual-flush toilets which use 1.3 gallons per flush or less.

The Town of Buckeye Water Resources Department can provide a list of WaterSense approved high efficiency or dual flush toilets. WaterSense labeled toilets are certified by independent laboratory testing to meet rigorous criteria for both performance and efficiency.

6.1.2 Leaky Toilets and Toilet Water Waste

Toilet leaks should be promptly repaired as they can result in thousands of gallons of water waste per year. Leaky toilet flappers should be promptly replaced. Toilet flappers are inexpensive and easy to replace. Food coloring or dye tablets can be used to check if a flapper needs to be replaced. To test for a leaky flapper, place two dye tablets or 10 drops of food coloring in a full toilet tank. Wait 10 minutes and if coloring appears in the toilet bowl water the flapper should be replaced.

Water can be saved by not using a toilet as a trash basket to flush used facial tissue or other items. In addition, a toilet or sink should not be used to discard unused prescription drugs, non-biodegradable material, or personal care products (such as nail polish remover or antibacterial soap/hand cleaner). Unused prescription drugs or personal care products that are flushed down a

toilet or sink cannot be treated by a sewage treatment plant and will return to the environment to contaminate future water supplies. Unused prescription drugs or personal care products should be disposed during household hazardous waste drop-off events.

6.1.2 Shower Efficiency

Shower water savings can be realized by limiting showers to five minutes or less and also by voluntarily replacing less efficient showerheads with reduced-output showerheads. Federal regulations limit the flow for each showerhead to 2.5 gallons per minute (gpm). However, some showerheads produce 1.5 gpm or less with no performance reduction. Replacement of 2.5 gpm showerheads with 1.5 gpm showerheads can reduce shower water usage by 40%. This could amount to a savings of approximately 1,825 gallons per person per year. In addition, plumbing codes do not limit the number of showerheads for each shower nor specify the maximum flow rate for other water-emitting showering devices. It is recommended that voluntary plumbing designs limit the number of showering devices to one per shower (for individual home showers) and set a maximum flow per square foot for all water emitters combined. A maximum flow rate of 1.5 gpm is recommended for each individual water-emitting showering device. In addition, dripping showerheads should be promptly repaired.

6.1.3 Bathroom Sink Efficiency

Bathroom sink water efficiency can be improved by turning off the faucet while brushing teeth. In addition, a mug or small cup can be filled with water to clean a razor instead of allowing the faucet to run while shaving. Installing reduced-output faucet aeration devices can also save water. In addition, dripping faucets should be promptly repaired.

6.1.4 Public or Commercial Restrooms

Automatic toilets, activated by motion sensors, are recommended for all public or commercial restrooms. High efficiency (<0.5 gallons per flush) or waterless urinals are also recommended for all public and commercial restrooms. In addition, urinals which do use water to flush should be automatically activated by motion sensors. Sink faucets in all public or commercial restrooms should be metered or automatically activated by motion sensors. In addition, dripping faucets should be promptly repaired.

6.1.5 Kitchen Water Efficiency

Water can be saved in the kitchen by installing low-flow sink aerator devices on kitchen sink faucets. Water can also be saved by installing high efficiency dishwashers which use less water than conventional models and do not require pre-rinsing before washing. Water can also be saved by filling a jug of water and placing it in the refrigerator instead of allowing the faucet to run while waiting for the water to cool when filling a glass of drinking water. In addition, dripping faucets should be promptly repaired.

6.1.6 Restaurant Water Efficiency

Water can be saved in restaurant kitchens by installing pre-rinse power rinse devices on kitchen sink faucets. These devices reduce flow to 1.28 gpm but supply a pressure of 60 pounds per square inch (psi) to remove food from dishes. Air-cooled ice machines can be installed to save water in restaurants. Connectionless vegetable steamers, which must be manually filled, can also

save water in restaurants. Water can also be saved if glasses of water are provided only upon request.

6.1.7 Home Laundry Room Water Efficiency

Efficient (front-load) washing machines can reduce laundry-room water use by 60% over conventional top-load washing machines. Washing only full loads can also save water.

6.1.8 Hotel Laundry Room Water Efficiency

Hotels laundry rooms can save water by reusing the final washing machine rinse water for the next load. Water can also be saved by asking guests to reuse towels for multiple days instead of washing towels after each use.

6.1.9 Hot Water Efficiency

Allowing the water to run while you wait for hot water wastes water. Reducing hot water use is one way to save water and the time spent waiting. In addition, installing on-demand hot water recirculators that include a built-in timer, so the devices run only when needed, can potentially save an average of 4 gallons of water every time you use hot water. Furthermore, voluntary plumbing designs should limit the diameter and length of hot water pipes to 40 feet or less and require insulation for the full length of hot water pipes. Voluntary plumbing designs should also differentiate the pipe size diameter requirements between cold and hot water pipes and specify a maximum hot water pipe diameter of ½-inch. With the exception of green building codes, current plumbing codes specify only minimum but no maximum pipe size requirements.

6.2 Buckeye Single Family Residence Green Building Code

In order to encourage energy and water efficiency the Town has established a voluntary Green Building Code for single family residences. The Town's Green Building Code sets mandatory standards and also allows the selection of options to achieve the "green building rating" for a single family residence.

The mandatory Green Building standards require items including, but not limited to: (a) fully insulated hot water lines; (b) a hot water demand controlled recirculation pump for hot water heaters located more than 20 feet from the farthest fixture served, and a manual control or occupant sensor switch to operate the recirculation pump, with an automatic temperature sensor shut off; and, (c) toilets that are high efficiency (maximum 1.3 gallons per flush or less) and/or dual flush operated (average 1.2 gallons per flush).

Green Building options which may be selected include, but are not limited to: (a) hot water branch lines from the manifold to each fixture which are a maximum of ½-inch in diameter; (b) bathroom faucets or showerheads which are high efficiency (2.0 gpm or less); (c) a two-pipe drain system for a future gray water recovery system; and, (d) the installation of a complete gray water system with landscape irrigation (this option may be installed for additional points).

Caution should be exercised whenever installing a gray water system or gray water features to ensure that gray water supplies do not contaminate potable water supplies. Therefore, only a licensed plumber or properly trained individual should install any gray water system or feature.

6.3 Swimming Pool Water Efficiency

Swimming pools seldom need to be drained. A typical 16-foot x 32-foot swimming pool loses more than 16,000 gallons of water per year due to evaporation. A pool cover can reduce evaporation loses by 90-95% (SAHRA, 2008). Pools covers can also keep debris out, reduce cleaning, serve as an added barrier for children or pets, extend the life of chemicals, and keep the water warmer at night to extend the swimming season. Keeping the water below the top of the pool can reduce loses caused by splashing. Manually cleaning pool filters and reducing pool back-washing can also save water.

6.4 Outdoor Water Efficiency

6.4.1 Reducing Outdoor Water Usage

Outdoor water uses, including landscape watering, make up approximately 60% of home water usage. Numerous steps can be taken to reduce outdoor water use, such as:

- Reducing discretionary outdoor water uses such as car washing;
- Washing vehicles at a car wash which recycles the water or at least one that discharges water to the sanitary sewer (where it can be treated and reused to water landscaping) is preferred to washing a vehicle at home;
- Using a broom instead of a hose to clean patios, sidewalks or driveways;
- Reducing evaporation losses by avoiding landscape watering during the heat of the day;
- Adjusting sprinklers to reduce overspray and runoff into streets;
- Installing smart irrigation controllers and rain-shut-off devices on irrigation timers;
- Selectively replacing turf with xeriscape or lower water-use landscaping;
- Discouraging winter over-seeding;
- Promoting preservation of natural desert landscaping; and,
- Setting timers on decorative fountains to run only certain hours of the day and shutting off fountains when windy or rainy.

Additional information is provided below regarding smart irrigation controllers.

6.4.2 Smart Irrigation Controllers

Smart irrigation control devices including evapotranspiration controllers, temperature/humidity sensors, and soil moisture sensors can reduce water use. A two-year (August 2004 through July 2006) study conducted by the University of Arizona determined that evapotranspiration controllers reduced median residential total water use by 25%. The study also determined that temperature/humidity sensors and soil moisture sensors reduced median residential total water use by 3% and 4%, respectively. Residents reported that the reductions in water use did not adversely affect the appearance or condition of the landscaping. Cost recovery for the retail costs of an evapotranspiration controller can occur in as little as 12 months for high water users. Typical evapotranspiration controllers cost $265 to $400, depending on the number of stations controlled.

7.0 WATER BILL CREDITS

Effective January 5, 2009, qualifying Town of Buckeye water customers may apply to the Water Resources Department for water bill credits for the purchase and installation of the following water use reduction devices or water efficient landscaping:

- Retrofits to high-efficiency or dual-flush toilets;
- Water efficient front-load washing machines;
- Hot water recirculators;
- Swimming pool covers;
- Smart irrigation controllers; and,
- Replacement of turf or high water use landscaping with xeriscape or artificial turf.

Credits will be deducted from monthly water bills until the credit is paid off. Customers must allow 60 days after the Water Resources Department completes the final inspection and gives final approval for the credit before the credit will be deducted from the water bill. If a customer moves and closes the account, the Town will refund any remaining credit to the customer, as long as the water-saving device remains with the home.

In order to be eligible for a credit, the customer must allow the Water Resources Department to inspect the property before the existing water use device or landscaping is removed (pre-installation inspection) and after the water use reduction device or landscaping is installed (post-installation inspection). Inspections may be scheduled beginning January 5, 2008 by calling the Water Resources Department at (623) 349-6800. The water use reduction device or landscaping must be properly installed to qualify for the credit. The customer must also present a receipt dated January 5, 2009 or later to the Town which verifies the purchase of the water use reduction device or landscaping materials. Table 1 lists eligible water reduction devices and landscaping, the dollar amount of the credit, and how often customers may apply for a particular credit. More information on how to obtain the credits will be posted on the Town of Buckeye Water Conservation web page before the credits take effect. Additional information can be obtained by calling (623) 349-6800.

7.1 Retrofit of Pre-1994 Toilets with High Efficiency or Dual-Flush Toilets

Town of Buckeye water customers may apply for a credit for the retrofit of pre-1994 toilets with high efficiency or dual-flush toilets. Only high efficiency toilets flushing 1.28 gallons per flush or less or dual-flush toilets flushing an average of 1.28 gallons per flush or less qualify. Only single family detached homes built before 1994 with toilets flushing 3.5 gallons per flush or more are eligible for this credit. Qualifying customers may apply for a credit of $50 per toilet, up to two per home, for the life of the home. The Town will pick up and dispose of discarded pre-1994 toilets (please schedule pick up three working days in advance). In order to qualify for the credit, the customer must schedule an inspection by the Town before the pre-1994 toilets are removed and after the high efficiency or dual-flush toilets are installed.

7.2 Retrofit of Post-1994 Toilets with High Efficiency or Dual-Flush Toilets

Town of Buckeye water customers may apply for a credit for the retrofit of toilets installed after 1994 with high efficiency or dual-flush toilets. Only high efficiency toilets flushing 1.28 gallons per flush or less or dual-flush toilets flushing an average of 1.28 gallons per flush or less qualify. Qualifying customers may apply for a credit of $25 per toilet, up to two per home, for the life of the home. The Town will pick up and dispose of discarded toilets (please schedule pick up three working days in advance). In order to qualify for the credit, the customer must schedule an inspection by the Town before the existing toilets are removed and after the high efficiency or dual-flush toilets are installed.

7.3 Water-Efficient (Front-Load) Washing Machines

Town of Buckeye water customers may apply for a credit for the replacement of an older top-load washing machine with a water-efficient front-load washing machine. A list of Town-approved models is available at the Water Resources Department. Only Tier 3 approved machines from the Town-approved list are eligible for the credit. Qualifying customers are eligible for a credit of $100 per washing machine with a limit of one washing machine per home.

7.4 Hot Water Recirculators

Town of Buckeye water customers may apply for a $50 water bill credit for the purchase and proper installation of a hot water recirculator. Only one hot water recirculator credit will be allowed per account per year. The hot water recirculator must be a model that includes a built-in timer, so the device runs only when needed. A copy of the purchase receipt and an inspection by the Town to verify correct installation and operation will be required before the credit can be issued. A pre-installation inspection is not required for this credit.

7.5 Swimming Pool Covers

Town of Buckeye water customers may apply for a credit for the purchase and proper installation of a vinyl swimming pool cover. Customers are eligible for a credit of $25 for a swimming pool cover costing less than $100. Customers are eligible for a credit of $50 for a swimming pool cover costing $100 or more. Only one swimming pool cover credit will be allowed per account once every three years. A receipt and post-installation inspection are required before this credit can be approved.

7.5 Smart Irrigation Controllers

Town of Buckeye water customers may apply for a $100 water bill credit for the purchase and proper installation of a smart irrigation controller. The make and model of the smart irrigation controller must be approved by the Water Resources Department prior to purchase. Qualifying smart irrigation controllers consist of evapotranspiration controllers which use daily local weather data along with historical evapotranspiration data to adjust runtimes to meet the water requirements of the landscape. In addition, the controller must also be supplied with a combination rain shut-off/temperature sensor which allows the controller to adjust the landscape irrigation based on the local temperature and also to disable irrigation when it rains. Only one smart irrigation controller credit will be allowed per account once every three years.

7.7 Replacement of High Water Use Landscaping or Turf with Xeriscape or Artificial Turf

Town of Buckeye water customers can apply for a $50 - $100 water bill credit for the removal of high-water use landscaping or turf and the replacement with xeriscape or artificial turf. This credit is not available for properties eligible to receive flood irrigation from the Buckeye Water Conservation and Drainage District or the Roosevelt Irrigation District. The Water Resources Department must inspect the property before the high water use landscaping or turf is removed and after the xeriscape or artificial turf is installed before the credit can be approved. If new xeriscape landscaping is installed, the credit cannot be approved until a properly operating drip irrigation system is installed to water the new xeriscape.

To qualify for this credit a minimum 500 square feet of area must be converted. A credit of $50 will be issued for the conversion of an area of 500 – 999 square feet. A credit of $75 will be issued for the conversion of an area of 1,000 – 1,499 square feet. A credit of $100 will be issued for the conversion of an area of 1,500 square feet or more. Only one credit for this conversion will be allowed per account per year.

Turning off the water to your lawn, or covering it with black plastic or decomposed granite is not an approved way to kill the grass before replacing it. Please refer to Appendix A for SAHRA's recommended method to kill turf grass.

8.0 WATER CONSERVATION ORDINANCE

Water conservation is in the interests of the Town of Buckeye, its citizens and businesses, and promotes the public welfare. The following sections set forth measures and actions intended to conserve water.

8.1 Outdoor Irrigation Water Use

8.1.1 Outdoor Irrigation Restrictions

In order to reduce evaporation losses outdoor irrigation is not allowed between 9:00 AM and 6:00 PM.

8.1.2 Exemptions to Outdoor Irrigation Restrictions

The following water sources are exempt from the restrictions of this section: (a) treated effluent; (b) gray water; (c) water harvested from precipitation; (d) water supplied by Buckeye Water Conservation and Drainage District, Roosevelt Irrigation District, Arlington Canal Company, other irrigation water used on agricultural crops, or agricultural irrigation tail water; (e) water withdrawn under the authority of a poor quality groundwater withdrawal permit issued by the Arizona Department of Water Resources; (f) fire hydrant flushing water; (f) reject water from a water treatment system or water treatment plant; and, (g) reject cooling water or bleed-off water from an evaporative cooler.

In addition, nursery stock, outdoor plants in moveable containers, and new landscaping for the first 10 days after planting are exempt from this section.

8.2 Charity Car Washes

Automatic shutoff nozzles are required for hoses used for all charity car washes. Charity car washes are encouraged to utilize commercial car washing facilities which recycle the water, are certified by the Town as a "water efficient or recycling car wash facility," or which discharge all water into the sanitary sewer system.

8.3 Automatic Shutoff Nozzles for Hoses

8.3.1 Automatic Shutoff Nozzles Required for Hoses

Automatic shutoff nozzles are required for all hoses used for hand irrigation watering, car washing or other outdoor uses. Water hoses used to wash automobiles, trucks, trailers, boats, airplanes and other types of mobile equipment must be equipped with a shutoff nozzle that completely shuts off the flow of water.

8.3.2 Exemptions for Automatic Shutoff Nozzles for Hoses

The following water sources or uses are exempt from the restrictions of this section: (a) treated effluent; (b) gray water; (c) water harvested from precipitation; (d) water withdrawn under the authority of a poor quality groundwater withdrawal permit issued by the Arizona Department of Water Resources; (e) water released by the Town or a fire department during the inspection or flushing of a fire hydrant; (f) water released during the flushing or maintenance of wells, water

lines, or water storage tanks by the Town or a water provider; (g) water used to extinguish a fire, abate a chemical release or water applied to abate a safety, health or accident hazard; (h) reject water from a water treatment system or water treatment plant; and, (i) reject cooling water or bleed-off water from an evaporative cooler.

8.4 Artificial or Synthetic Turf

8.4.1 Artificial or Synthetic Turf Use

Artificial or synthetic turf shall be allowed on all surfaces where landscaping can be used. No individuals or associations may impose private covenants, conditions, restrictions, deed clauses or other agreements between parties, which prevent individuals from utilizing artificial or synthetic turf as an alternative to any landscaping.

8.4.2 Exemptions to Artificial or Synthetic Turf Use

The following surfaces are exempt from the restrictions of this section: athletic fields, playgrounds, school grounds, dog parks, retention basins, natural areas or conservation areas frequented by wildlife, natural desert areas, recharge facilities, and property where horses, livestock or poultry may be maintained.

8.5 Use of Water Efficient Landscaping

The use of water efficient landscaping is encouraged.

8.6.1 No New Turf in Public Right-of-Way

No new turf shall be installed in a public right-of-way or medians.

8.7 Prohibition on Certain Covenants, Conditions and Restrictions.

Individuals or associations are prohibited from imposing private covenants, conditions, restrictions, deed clauses or other agreements between parties, which prevent individuals from utilizing water efficient landscaping provided such landscaping receives approval from the Town of Buckeye Community Development Department. Landscaping designs may not be prohibited solely on the basis that the design makes use of water efficient landscaping.

8.8 Waterless or High Efficiency Urinals

Waterless or high efficiency (<0.5 gallons per flush) urinals must be installed in all Town-owned buildings constructed after January 2, 2010. The installation of waterless or high efficiency (<0.5 gallons per flush) urinals is encouraged in all public buildings.

8.9 Metered Faucets

Self-closing or self-closing metered faucets shall be installed in lavatories intended to serve the transient public, including those in, but not limited to, restaurants, bars, service stations, golf courses, and public buildings which are constructed after January 2, 2010. Such faucets shall not deliver more than 0.25 gallons (1.0 liters) of water per use.

8.10 Washing of Driveways, Sidewalks and Patios

The use of potable water to wash driveways, sidewalks and patios is prohibited. Water applied to abate a safety, health, chemical or accident hazard is exempt from this section.

8.11 Car Washing

Effective January 2, 2010, the Town will provide certification for water efficient or recycling car washes that request such certification and meet the Town's requirements for a water-efficient or recycling car wash. Car washes that receive the Town's certification may post signs which advertise their certified status. It is the sole discretion of the Town whether or not to grant the certified status or to allow the posting of signs which advertise this status. Such signs must be approved by the Town before posting.

8.12 Water Leaks and Waste

Leaks of water from water lines, irrigation lines, irrigation devices, the misdirection or water from irrigation devices, or over watering on private property which causes water to flow onto a public right-of-way, sidewalk, driveway or adjacent property shall be promptly repaired or corrected by the owner. Repairs or correction shall occur within seven days after notification by the Town.

8.13 Construction Water Plan

The use of potable groundwater for construction water is discouraged, and the use of effluent or reclaimed water for construction water is encouraged. The Town requests the assistance of developers and contractors to reduce the use of potable groundwater for construction water. If effluent or reclaimed (recycled) water is not available the developer or contractor is encouraged to use water from the following sources (in ascending order of preference) for construction water:

- Recovered effluent (most preferred);
- Direct delivery excess Central Arizona Project Water;
- Recovered Central Arizona Project Water;
- Groundwater of such poor quality that it cannot be economically treated for potable use;
- Groundwater withdrawn under a General Industrial Use permit issued by ADWR; and,
- Groundwater withdrawn under a Type 1 or 2 non-irrigation grandfathered right (least preferred).

If groundwater withdrawn under a Type 1 or 2 non-irrigation grandfathered right or the Town's service area right will be used for construction water the developer or contractor must submit a brief written construction water plan describing: (a) the water source; (b) why other sources of water cannot be used; and, (c) steps proposed to use water efficiently and minimize waste. Written construction water plans must be submitted to the Water Resources Director for approval. The plans need not exceed two pages in length.

8.14 Restrictions During a Water Shortage

The Town Manager, upon recommendation from the Water Resources Director or authorization by the Town Council, may declare or rescind Water Conservation Levels during a water shortage.

During periods of reduced water supplies, the Water Resources Director will monitor the projected water supply and demand on a daily basis and advise the Town Manager. The Town Manager will declare the appropriate Water Conservation Level in a notice at the office of the

Town Clerk, on the Town website, and in a local newspaper. Water conservation measures and water use restrictions shall take effect upon publication of the notice with the office of the Town Clerk and remain in effect until rescinded by the Town Manager.

The following Water Conservation Levels shall govern the use of water by water customers of the Town of Buckeye. The Water Conservation Levels will be categorized from Water Conservation Level One to Water Conservation Level Four, with Level Four being the most severe. The Water Conservation Levels and corresponding response are described below.

8.14.1 Water Conservation Level One: Water Awareness

When water demand is equal to the safe water production capability Water Conservation Level One: Water Awareness shall be declared. The targeted water demand reduction percentage is 5%. Such a water conservation declaration may be system-wide or confined to a portion of the service area.

Responses Triggered by Water Conservation Level One: Water Awareness: Water users are encouraged to reduce water used for irrigation, vehicle washing, and construction.

8.14.2 Water Conservation Level Two: Water Restrictions

When water demand exceeds the safe water production capability for three consecutive days (based on low storage tank levels or other factors considered by the Water Resources Director) Water Conservation Level Two: Water Restrictions shall be declared. The targeted water demand reduction percentage is 10%. Such a water conservation declaration may be system-wide or confined to a portion of the service area.

Responses Triggered by Water Conservation Level Two: Water Restrictions: In addition to the water use reduction described in Section 8.14.1 above the following restrictions are in effect:

(a) Vehicles washing should be reduced and vehicles may only be washed at car washes that recycle the water or discharge to the sanitary sewer. No restrictions apply to vehicles which must be washed for public health or safety purposes;
(b) No ornamental fountains may be used unless they are equipped with a recycling pump;
(c) Water may not be used from a fire hydrant except for emergencies or upon written approval from the Public Works Director or Fire Chief; and,
(d) Odd-even day irrigation restrictions apply. Odd-numbered addresses may only irrigate on Tuesdays, Thursdays and Saturdays. Even-numbered addresses may only irrigate on Mondays, Wednesdays and Fridays. The following water sources or uses are exempt from this restriction: (1) treated effluent; (2) gray water; (3) water harvested from precipitation; (4) water withdrawn under the authority of a poor quality groundwater withdrawal permit issued by the Arizona Department of Water Resources; (5) reject water from a water treatment system or water treatment plant; and, (6) reject cooling water or bleed-off water from an evaporative cooler; (7) nursery stock, outdoor plants in moveable containers, and new landscaping for the first 10 days after planting; and, (8) water supplied by

Buckeye Water Conservation and Drainage District, Roosevelt Irrigation District, Arlington Canal Company, other irrigation water used on agricultural crops, or agricultural irrigation tail water.

8.14.3 Water Conservation Level Three: Water Reductions

When water demand exceeds the safe water production capability for two consecutive weeks (based on low storage tank levels or other factors considered by the Water Resources Director) Water Conservation Level Three: Water Reductions shall be declared. The targeted water demand reduction percentage is 20%. Such a water conservation declaration may be system-wide or confined to a portion of the service area.

Responses Triggered by Water Conservation Level Three: Water Reductions: In addition to the water use reduction described in Section 8.14.2 above the following restrictions are in effect:

(a) Vehicles may only be washed for public health or safety purposes;
(b) Swimming pools, spas or wading pools may not be refilled;
(c) No ornamental fountains may be used; and,
(d) Landscape may only be irrigated once per week. Odd-numbered addresses may only irrigate on Tuesdays. Even numbered addresses may only irrigate on Thursdays. The following water sources or uses are exempt from this restriction: (1) treated effluent; (2) gray water; (3) water harvested from precipitation; (4) water withdrawn under the authority of a poor quality groundwater withdrawal permit issued by the Arizona Department of Water Resources; (5) reject water from a water treatment system or water treatment plant; and, (6) reject cooling water or bleed-off water from an evaporative cooler; (7) nursery stock, outdoor plants in moveable containers, and new landscaping for the first 10 days after planting; and, (8) water supplied by Buckeye Water Conservation and Drainage District, Roosevelt Irrigation District, Arlington Canal Company, other irrigation water used on agricultural crops, or agricultural irrigation tail water.

8.14.4 Water Conservation Level Four: Water Curtailments

The Town Manager may declare Water Conservation Level Four: Water Curtailments when any of the following conditions occur: (1) water demand exceeds the water production capability by 30% for two consecutive days; (2) the water reduction steps of Water Conservation Level Three are insufficient to reduce the water demands below the water production capability; or, (3) catastrophic water supply infrastructure failure occurs. The targeted water demand reduction percentage is 40%. Such a water conservation declaration may be system-wide or confined to a portion of the service area.

Responses Triggered by Water Conservation Level Four: Water Curtailments: In addition to the water use reduction described in Section 8.14.3 above the following restrictions are in effect:

(a) Potable water may not be used for construction, dust control, or street sweeping; and,

(b) Landscape may not be irrigated. The following water sources or uses are exempt from this restriction: (1) treated effluent; (2) gray water; (3) water harvested from precipitation; (4) water withdrawn under the authority of a poor quality groundwater withdrawal permit issued by the Arizona Department of Water Resources; (5) reject water from a water treatment system or water treatment plant; (6) reject cooling water or bleed-off water from an evaporative cooler; (7) nursery stock, outdoor plants in moveable containers, and new landscaping for the first 10 days after planting; and, (8) water supplied by Buckeye Water Conservation and Drainage District, Roosevelt Irrigation District, Arlington Canal Company, other irrigation water used on agricultural crops, or agricultural irrigation tail water.

9.0 REFERENCES

Arizona Department of Water Resources, 2008, Modified Non-Per Capita Conservation Program.

City of Peoria, Arizona, 2008, Water Conservation Rebate Program. http://www.peoriaaz.com/index1.htm

City of Surprise, Arizona, 2007, Water Conservation Ordinance No. 07-03.

H_2Ouse, 2008, a website which points out opportunities to save water in and around the home. h2ouse.org

SAHRA, 2008, (Sustainability of Semi-Arid Hydrology and Riparian Areas), a website which provides water resource management information and advice. sahra.arizona.edu

Town of Buckeye Water Conservation web page, 2008. http://www.buckeyeaz.gov/index.asp?nid=703

Town of Gilbert, Arizona, 2000, Article VIII Water Conservation, Ordinance No. 1316.

Town of Payson, Arizona, 2008, Water Conservation Resolution No. 2367.

University of Arizona, Office of Arid Lands, 2007, "Smart" Irrigation Controller Study in Tucson, Arizona, Submitted to Arizona Department of Water Resources, 41 pages.

WaterSense, 2008, U.S. Environmental Protection Agency website that promotes water-efficient products, services, and practices. watersense@epa.gov

Water Use It Wisely, 2008, a website for water saving tips. wateruseitwisely.com

TABLE 1

TOWN OF BUCKEYE
WATER BILL CREDITS

TABLE 1
Town of Buckeye Water Bill Credits (Draft 10/29/2008)

DESCRIPTION	CREDIT AMOUNT	SUMMARY OF DETAILS
Replace pre-1994 toilets with high efficiency or dual flush toilets	$50 per toilet, maximum of two	Town inspection required before and after replacement. Receipt required. Town will pick up discarded toilets.
Replace post-1994 toilets with high efficiency or dual flush toilets	$25 per toilet, maximum of two	Town inspection required before and after replacement. Receipt required. Town will pick up discarded toilets.
Water Efficient (front-load) Washing Machine	$100, one per home	Must be selected from Town-approved list available at Water Resources Department. Town inspection required after installation. Receipt required.
Hot Water Recirculator	$50, one per year	Must include built-in timer so device runs only when needed. Town inspection required after installation. Receipt required.
Swimming Pool Cover	$25-$50, once every 3 years	Must be made of vinyl. Town inspection required after installation. Receipt required. $25 credit for cover costing less than or equal to $100; $50 credit for cover costing more than $100
Smart Irrigation Controller	$100, once every 3 years	Controller must use daily local weather data & historical evapotranspiration data to adjust runtimes. Must also be supplied with combination rain shut-off/temperature sensor.Town inspection required after installation. Receipt required.
Replacement of High Water Use Landscaping or Turf w/Xeriscape or Artificial Turf	$50-$100, once per year	Town must inspect property before high water use landscaping or turf is removed and after xeriscape or artificial turf is installed before credit can be approved. Credit cannot be approved until properly operating drip irrigation system is installed to water xeriscape.

APPENDIX A

SAHRA'S
RECOMMENDED METHOD
TO REMOVE TURF GRASS

SAHRA's Recommended Method to Remove Turf Grass

SAHRA (Sustainability of Semi-Arid Hydrology and Riparian Areas, 2008) recommends the following methods to kill turf grass before replacing it:

Before replacing some or all of a turf lawn with more water-efficient landscaping, please be aware turf grass, especially Bermuda grass or similar turf types, cannot be killed by simply not irrigating it. Also, attempting to rip it out or dig it up is unlikely to be successful, because the roots go deep. Covering turf grass with a tarp or plastic sheets to deny it water and light also is very unlikely to work. The most practical way to kill most turf grass is by using an herbicide that kills plants on contact.

If an herbicide is used, please be careful and follow all safety precautions on the label carefully, especially if children, pets or wildlife (including wild birds) could come into contact with the herbicide. Since herbicides may kill any plant they touch, please be careful when applying them. If an herbicide is used, choose one that decomposes rapidly, to allow the planting of water-efficient trees and shrubs where the grass was.

Bermuda grass cannot be killed when it is dormant in the winter. The best seasons to kill Bermuda grass are Spring and late Summer. Prior to application of an herbicide, the grass must be irrigated so that it is green and growing. This will allow the herbicide to move through the entire plant and kill the roots. An herbicide should not be applied if the temperature is below 80^{o}F or if there is a forecast of rain. Please follow the directions that come with the herbicide. Using more herbicide than is recommended will not kill grass any faster. Two days after applying the herbicide, resume irrigating the grass. An herbicide should kill grass in one to two weeks. If the grass still shows signs of life after two weeks a second application of the herbicide may be necessary. Dead turf can be removed by setting a lawn mower very low and "scalping" it, or using a power rake.